BTC™

KEYBOARD
FOR IBM* & ITS COMPATIBLE PC*/XT*/AT*

BTC-5349 TECHNICAL MANUAL

*IBM, PC, XT, AT are registered trademarks of International Business Machines Corp.

FEDERAL COMMUNICATION COMMISSION GUIDELINES

WARNING: THIS EQUIPMENT HAS BEEN CERTIFIED TO COMPLY WITH THE LIMITS FOR A CLASS B COMPUTING DEVICE, PURSUANT TO SUBPART J OF PART 15 OF FCC RULES. ONLY COMPUTER AND PERIPHERALS (COMPUTER INPUT/OUTPUT DEVICES, TERMINALS, PRINTERS, ETC.) CERTIFIED TO COMPLY WITH THE CLASS B LIMITS MAY BE ATTACHED TO THIS KEYBOARD. OPERATION WITH NON-CERTIFIED PERIPHERALS IS LIKELY TO RESULT IN INTERFERENCE TO RADIO AND TV RECEPTION.

To insure compliance to FCC non-interference regulations, peripherals attached to this computer required shielded I/O cables.

This equipment generates and uses radio frequency energy and if not installed and used proporly, that is, in strick accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient the receiving antenna
* Relocate the computer with respect to the receiver
* Move the computer away from the receiver
* Plug the computer into a different outlet so that computer and receiver are on different branch circuits

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the FCC helpful:

"How to Indentify and Resolve Radio-TV Interference Problems"

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345.

NOTICE:

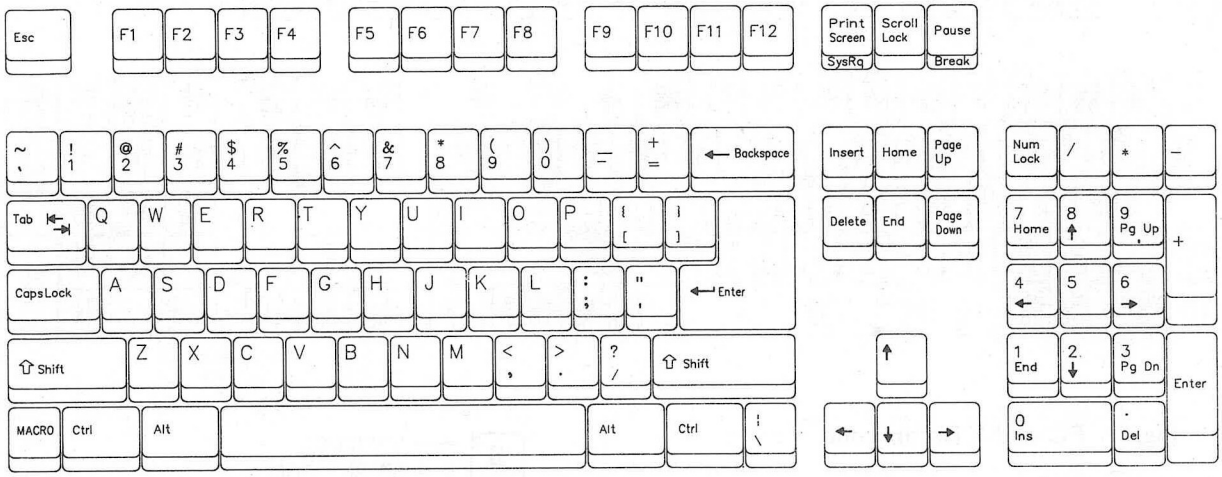
1. In order to insure continued compliance to the FCC emission limits for this keyboard, it is necessary to use computer and I/O cables which are shielded. This shield must be terminated to the metallic cabinet at both ends to guarantee adequate suppression of undesirable emissions.
2. BTC Corp. reserves the right to make changes or improvements in the product(s) described in this manual without notice at any time.
3. BTC is a registered trademark of Behavior Tech Computer Corporation.

KEYBOARD LAYOUTS

Please use the appropriate conversion program "KEYBXX" (on DOS 3.3 diskette) to select the desired keyborad layout as below;

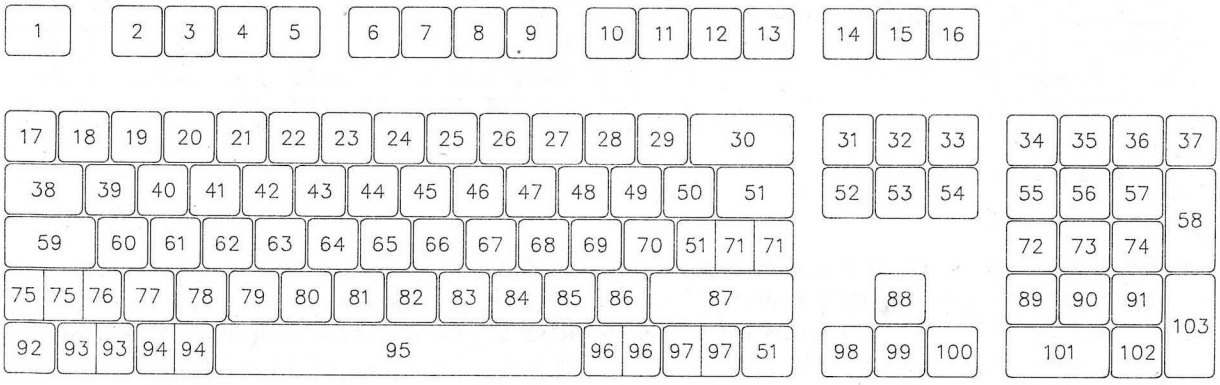
BTC-5339 PC/XT/AT Compatible

- ★ **U.S. ENGLISH;**
- ★ 102 keys;
- ★ With L-shaped Enter key that most typists prefer;
- ★ Adding a MACRO key for running BTC's software: MacroKey, a user-defined keyboard program.



KEY POSITIONS

Please refer to upper left part of CIRCUIT DIAGRAMS shown on page 5.



KEYSWITCH SCAN CODE

The keys shown in the code chart below will output a 8-bit code for a depression (make) or a release (break) and are electrical compatible for the IBM personal computer PC and XT (shown on fig. 1), AT (shown on fig. 2).

The bit assignments for each key are shown in the hexadecimal numbering system. Hexadecimal means 16 and is simply a shorthand notation used to express the binary bit patterns.

As to AT, the break code of each key is transmitted a "F0 HEX" followed by that key's make code. For example, the make code of character "A" is "1C HEX", so its break code is "F0, 1C HEX".

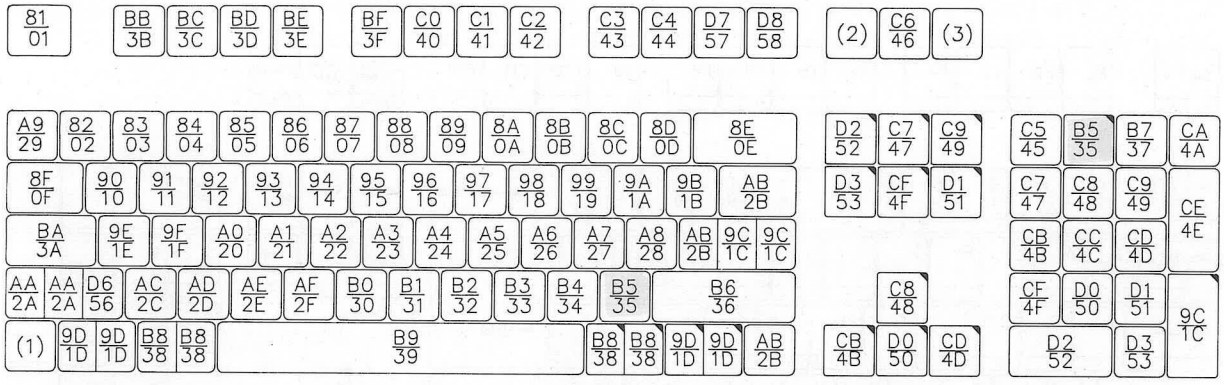
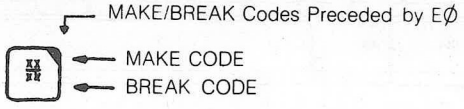


Fig. 1. PC and XT scan code



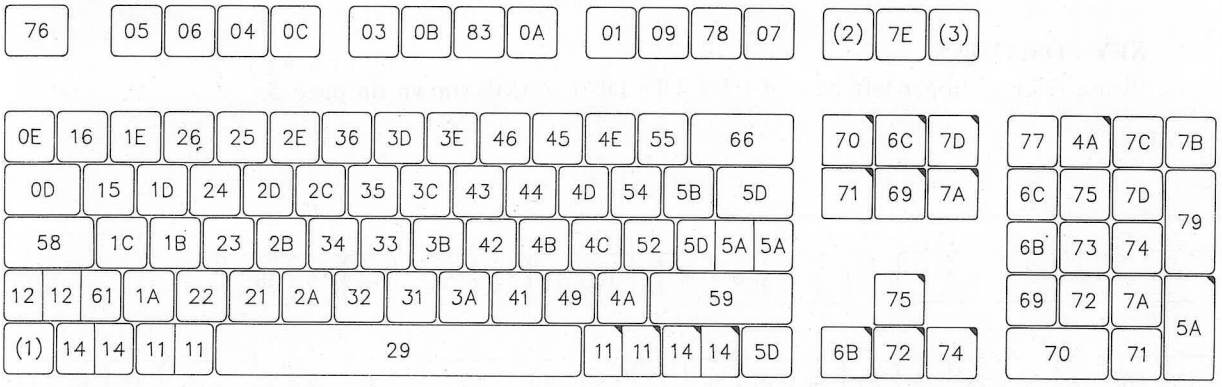


Fig 2. AT scan code

NOTES:

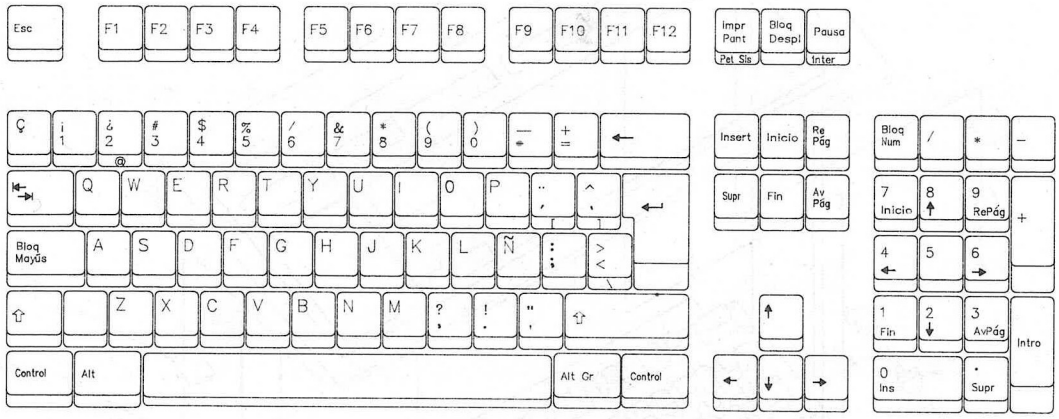
(1) The MACRO key, which has scan code 6FH, is a special key you can find it only on BTC-5339 keyboard. It is used for calling up BTC's software package: MacroKey.

(2) The RPINT SCREEN key is a new key that does the same function as the shift and "*" key pressed at the same time. Its scan code string of make/break are E0 2A E0 37/E0 B7 E0 AA for PC & XT, E0 12 E0 7C/E0 F0 7C E0 F0 12 for AT. If the PRINT SCREEN key is pressed with the CTRL or SHIFT key, its scan code string of make/break are E0 37/E0 B7 for PC & XT, E0 7C/E0 F0 7C for AT. The PRINT SCREEN key pressed with the ALT key will do the SYS-REQ function. And SYS-REQ make/break codes are 54/D4 for PC & XT, 84/F0 84 for AT.

(3) The PAUSE key is a new key that duplicates the CTRL/NUM LOCK operation. Its scan code string are E1 1D 45 E1 9D C5 for PC & XT, E1 14 77 E1 F0 14 F0 77 for AT. When the PAUSE key is pressed with the CTRL key, it will do the function as the CTRL/SCROLL operation does. Its scan code string are E0 46 E0 C6 for PC & XT, E0 7E E0 F0 7E for AT. The PAUSE key is the only one that is not typematic.

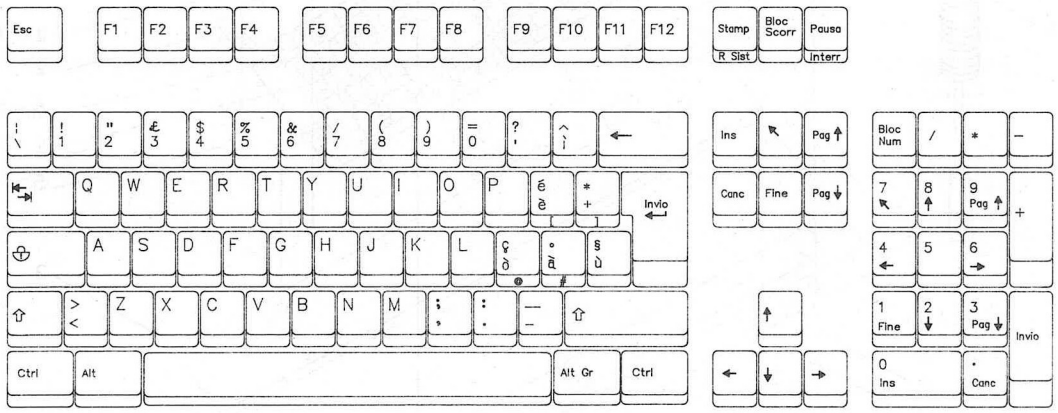
BTC-5349 PC/XT Compatible

★ **SPANISH;**
★ 102 keys;
★ Adopting IBM's character array assignments.



BTC-5349 AT Compatible

★ **ITALIAN;**
★ 102 keys;
★ Adopting IBM's character array assignments.



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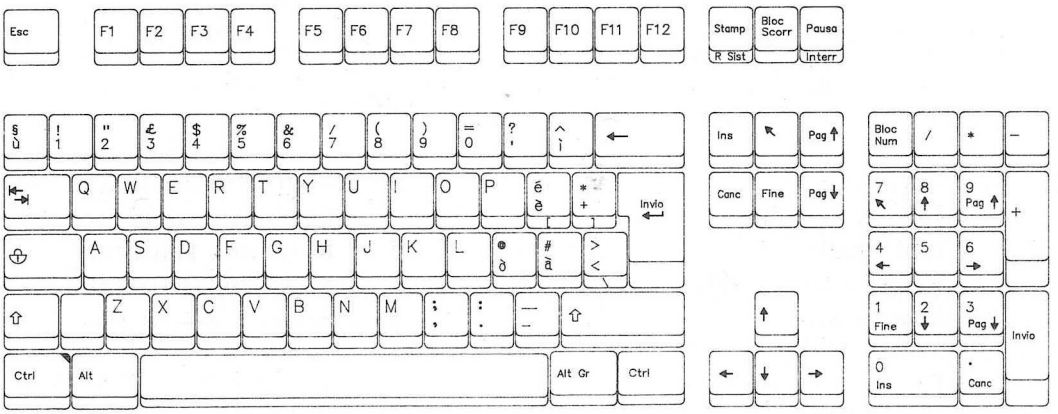
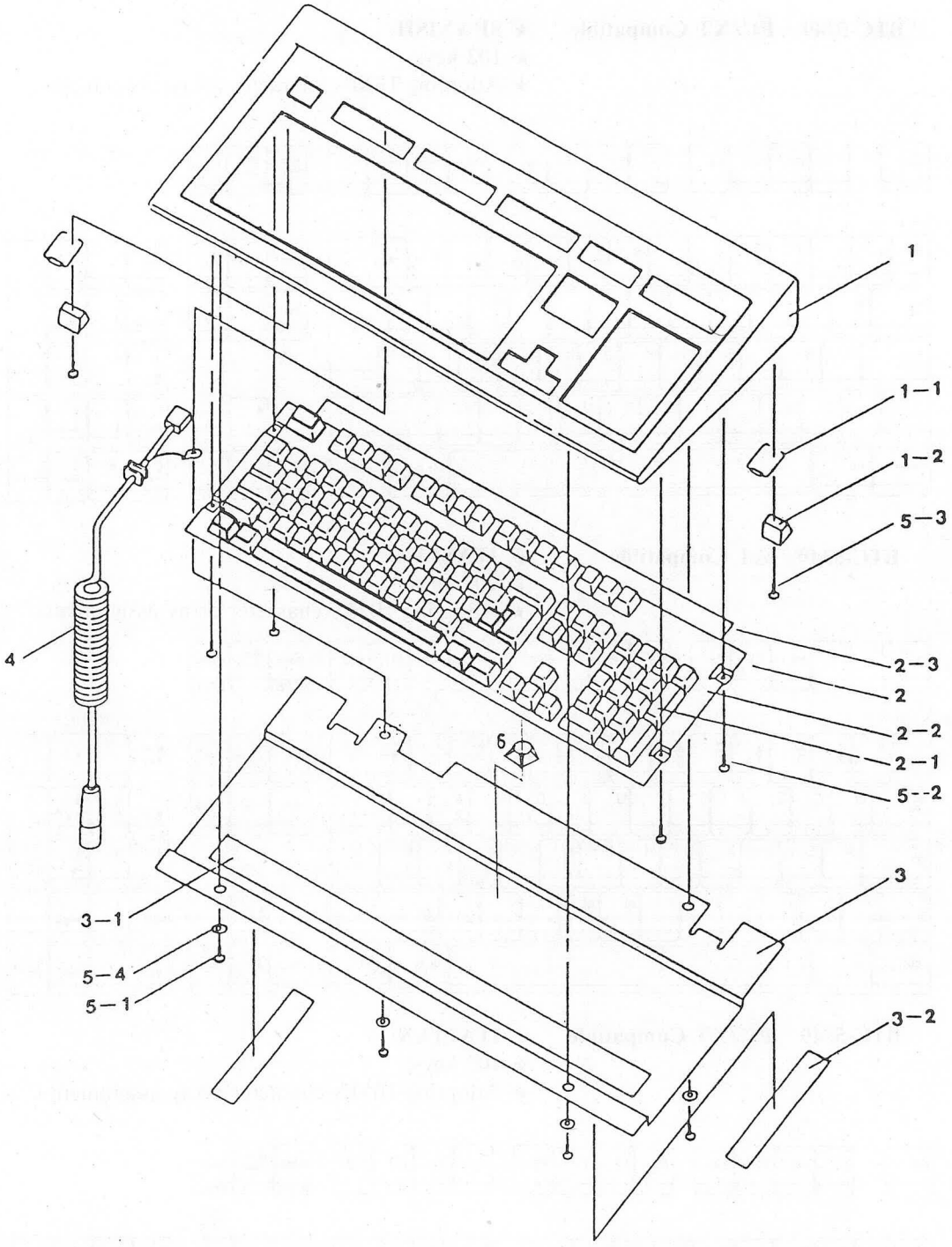


KEYBOARD ASSEMBLY FOR BTC-5349



1 Enclosure
1 – 1 Leg, Adjustable
1 – 2 Bail Block
2 Keyboard Assembly
2 – 1 Keytop Set
2 – 2 Swtich Holder
2 – 3 Printed Circuit Board
3 Base Plate
3 – 1 Strip, Adhesive
3 – 2 Foot, Rubber Black
4 Cable Assembly
5 Mounting Hardware
5 – 1 Screw M4 × 6 P = 0.7
5 – 2 Screw 1/8-40-0.312
5 – 3 Screw M3 × 12 P = 0.5
5 – 4 Spring Washer 4.5 Dia.
6 Rubber Support

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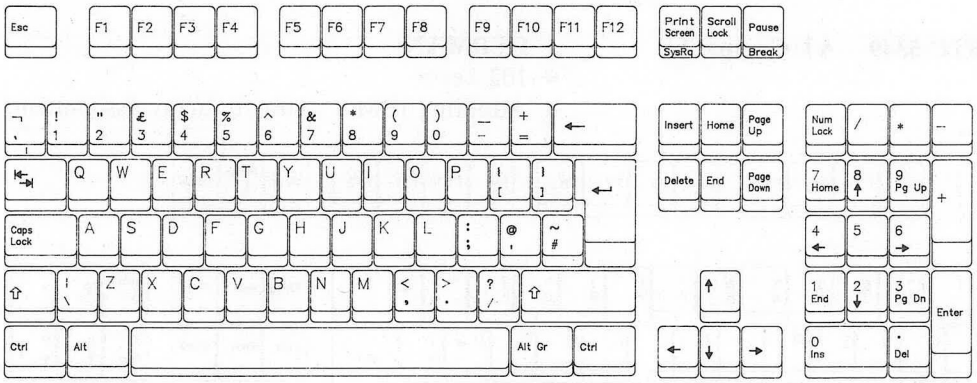

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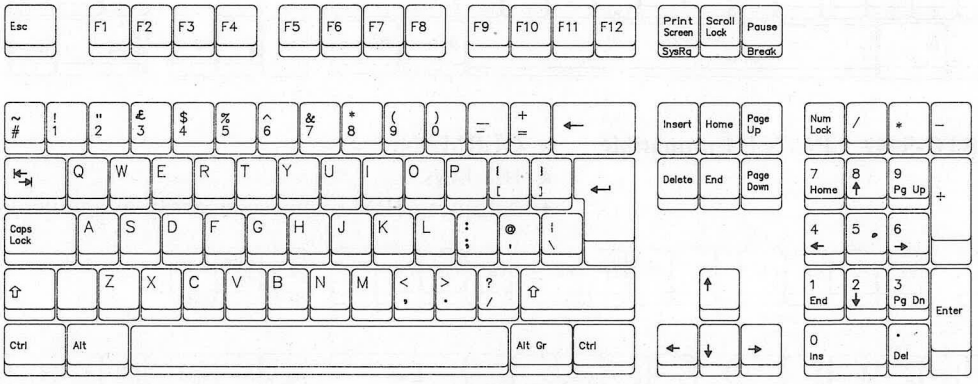

BTC-5349 AT Compatible

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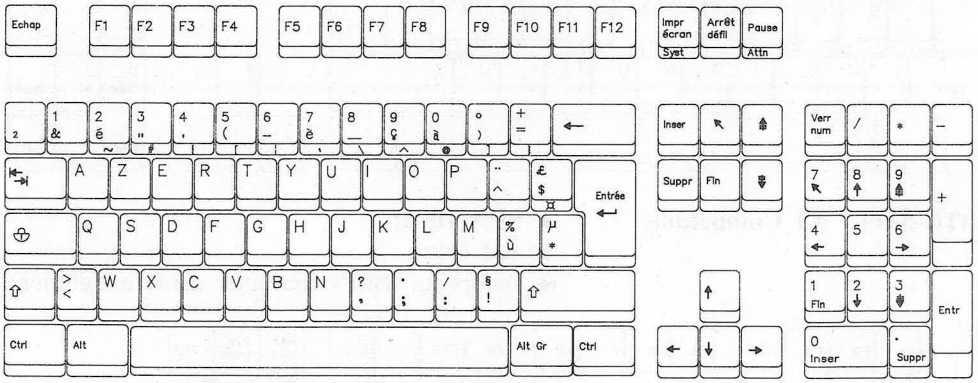

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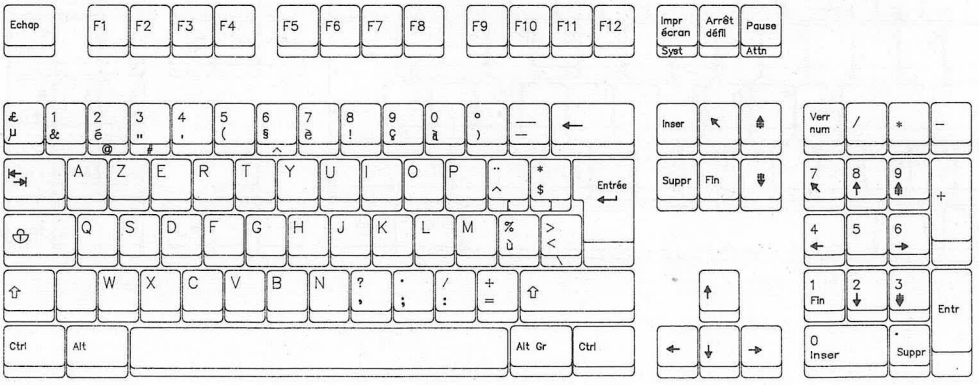

BTC-5349 AT Compatible

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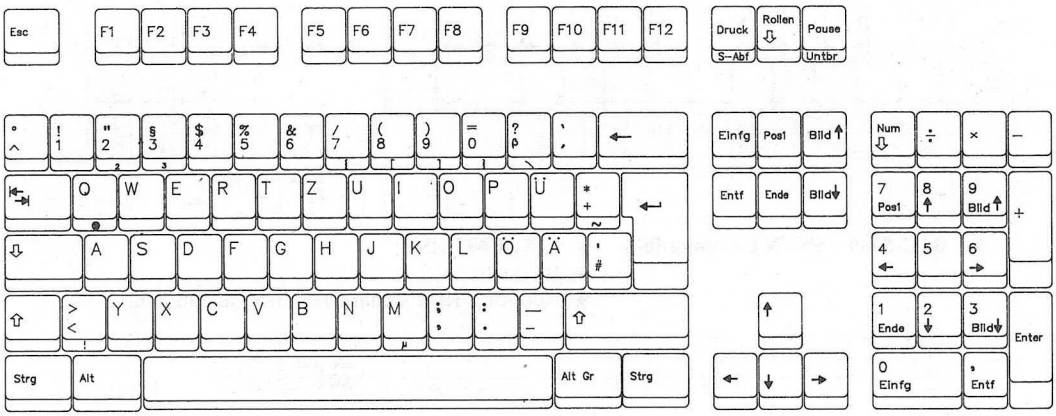
Esc
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12
Druck S-Abf
Rollen
Pause Untbr
Einfg Pos1 Bild↑
Entf Ende Bild↓
Num ÷ × −
7 Pos1 8 9 Bild↑ +
4 5 6
1 Ende 2 3 Bild↓ Enter
0 Einfg , Entf
Strg Alt Alt Gr Strg

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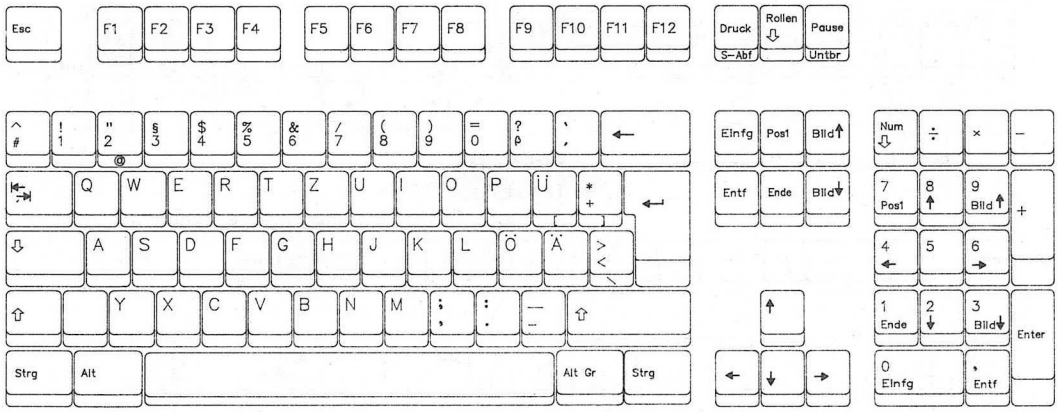
Esc
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12
Druck S-Abf
Rollen
Pause Untbr
Einfg Pos1 Bild↑
Entf Ende Bild↓
Num ÷ × −
7 Pos1 8 9 Bild↑ +
4 5 6
1 Ende 2 3 Bild↓ Enter
0 Einfg , Entf
Strg Alt Alt Gr Strg

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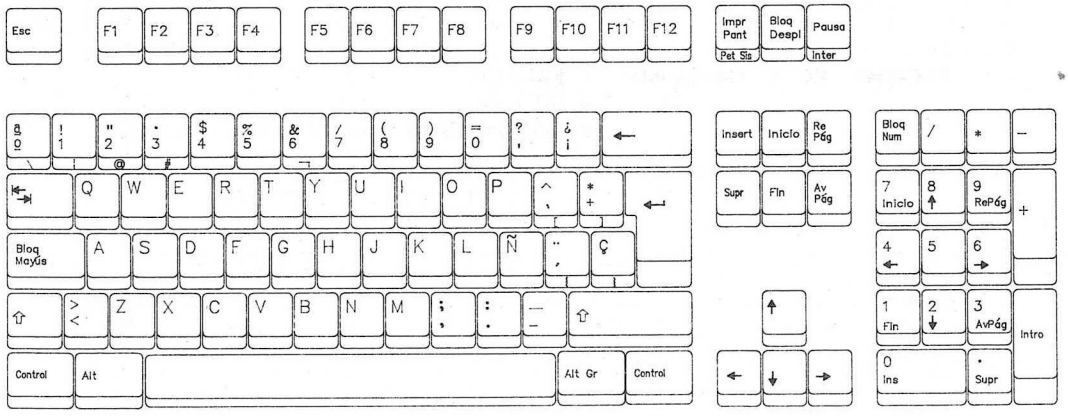
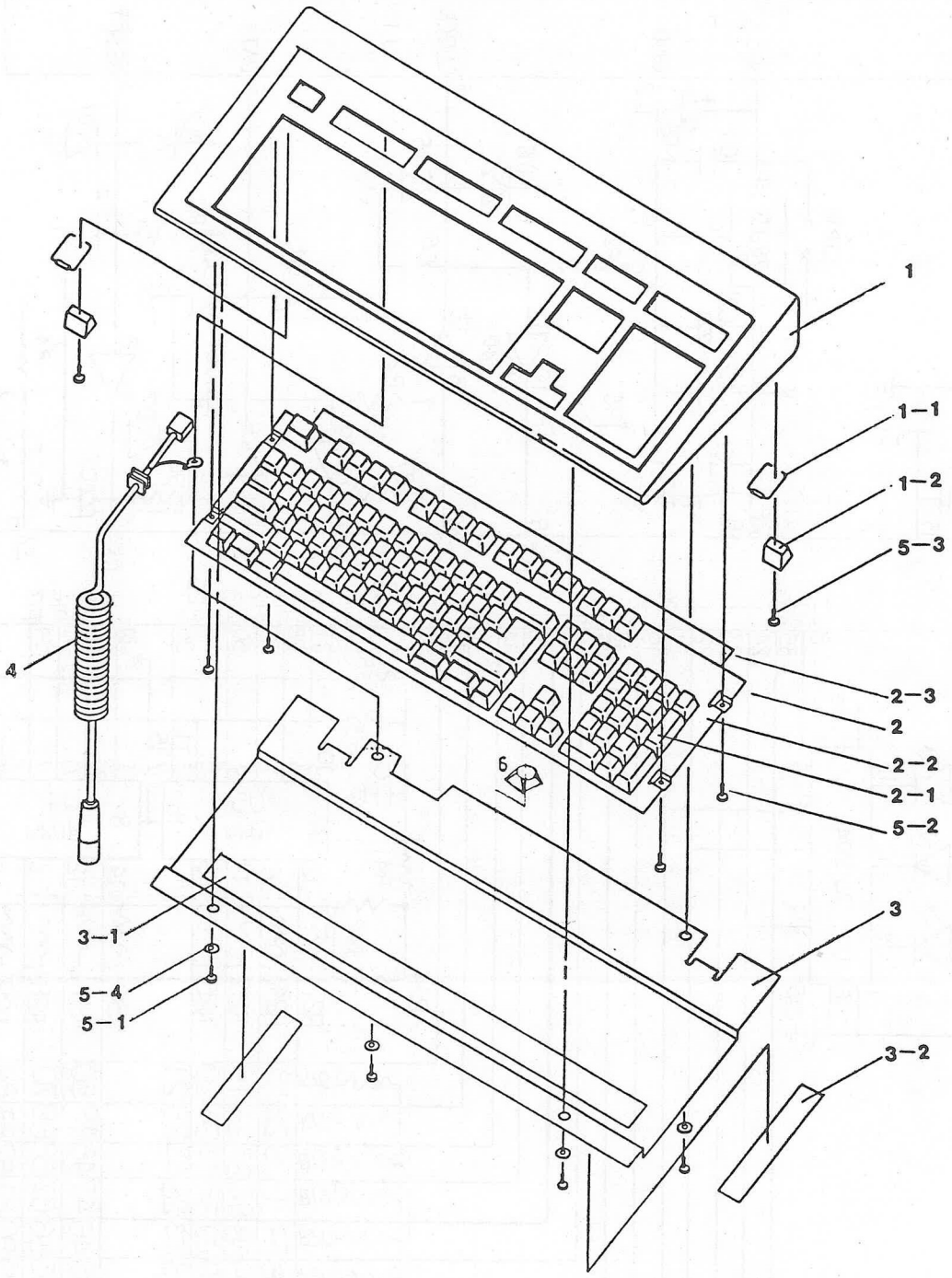

Esc
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12
Impr Pant Pet Sis
Bloq Despl
Pausa Inter
insert Inicio Re Pág
Supr Fin Av Pág
Bloq Num / * −
7 Inicio 8 9 RePág +
4 5 6
1 Fin 2 3 AvPág Intro
0 Ins . Supr
Bloq Mayús
Control Alt Alt Gr Control

KEYBOARD ASSEMBLY FOR BTC-5339



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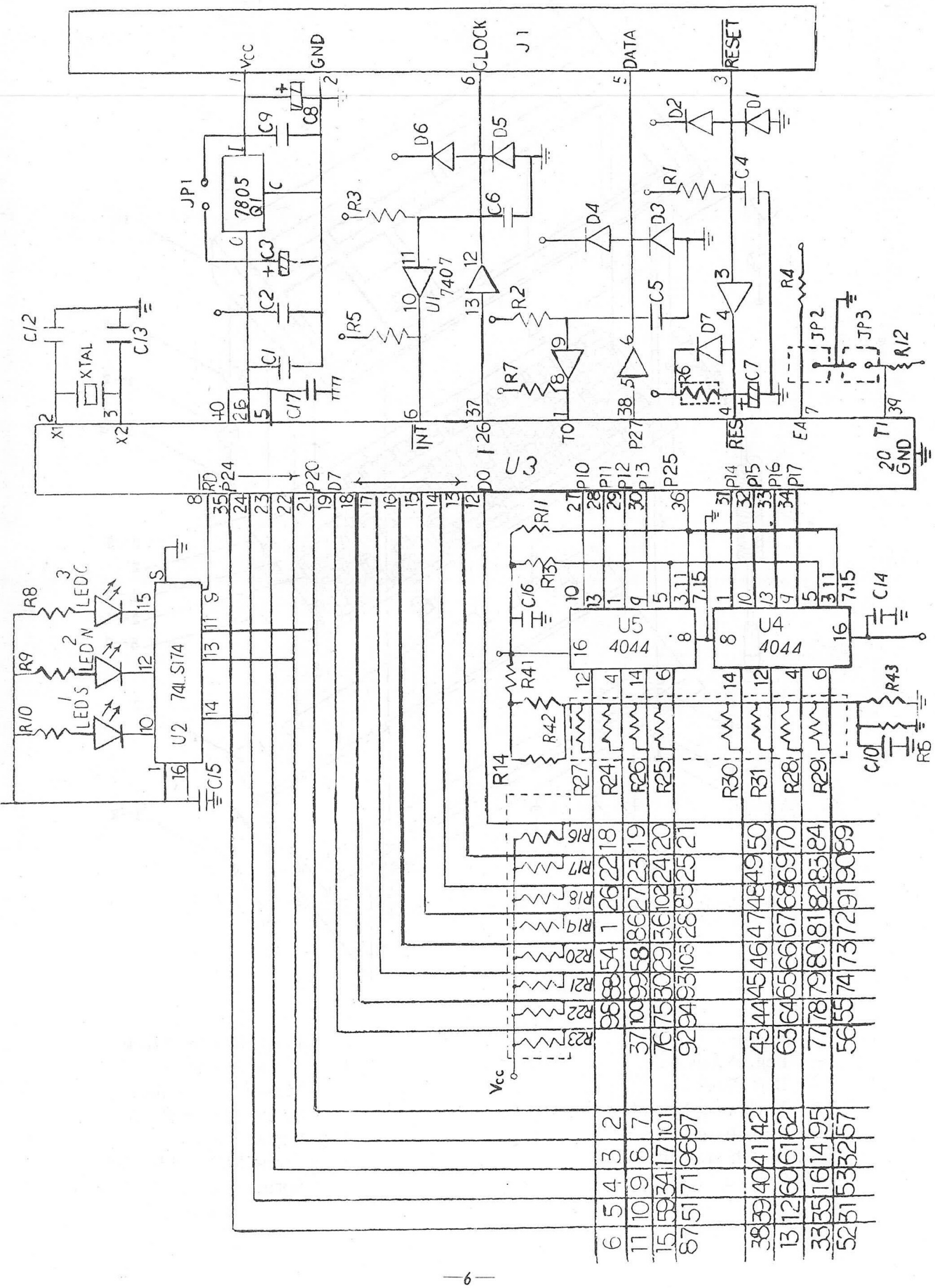

J1
VCC
GND
CLOCK
DATA
RESET
JP1
7805
Q1
C8
C9
C1
C2
C3
C12
C13
C17
XTAL
X1
X2
U3
INT
T0
P27
RES
EA
T1
GND
P24
RD
P20
D7
D0
P10
P11
P12
P13
P25
P14
P15
P16
P17
U1
7407
D1
D2
D3
D4
D5
D6
D7
R1
R2
R3
R4
R5
R6
R7
C4
C5
C6
C7
JP2
JP3
R12
U2
74LS174
LED1
LED2
LED3
R8
R9
R10
C15
U5
4044
U4
4044
C16
R11
R13
C14
R41
R42
R43
C10
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
VCC

BTC-5339/5349 Rev. 6.0/6.1/6.2/6.3 PARTS LIST

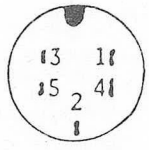
PART ONE

QTY	LABEL-ID	DESCRIPTION	REMARKS
1	U1	7407	HEX BUFFER/DRIVER (OPEN COLLECTOR)
1	U2	74LS174	SIX EDGE-TRIGGERED D-TYPE FLIP-FLOPS
1	U3	35332 CPU	IT MAY USE A05339A*26 (BTC5339A) OR
2	U4, U5	4044B	A05339B*26 (BTC5339B) CMOS RS-LATCH REFER
1	C3	ELECTROLYTIC CAPACITOR 10UF 16V	TO 4044A-1 16-LEVEL TEST MANUAL
1	C7	ELECTROLYTIC CAPACITOR 1UF 16V	
7	C2, C10, C11 C14, C15 C16, C17	CERAMIC CAPACITOR 0.1UF 50V	
3	C4, C5, C6	CERAMIC CAPACITOR 33PF 50V	
2	C12, C13	CERAMIC CAPACITOR 10PF 50V	
3	R8, R9, R10	150 OHM +/–5% 1/4W RESISTOR	
2	R2, R3	1.2K OHM +/–5% 1/4W RESISTOR	THE RESISTORS BETWEEN 100 OHM & 150 OHM CAN BE USED
13	R1, R5, R7 R11,R13,R16 R17,R18,R19 R20,R21,R22 R23	10K OHM +/–5% 1/4W RESISTOR	
8	R24,R25 R26,R27 R28,R29 R30,R31	100K OHM +/–5% 1/4W RESISTOR	
3	R41, R42 R43	+/–1% 1/4W RESISTOR DEPENDING ON 4044B	
1	XTAL1	6.144 MHZ CRYSTAL	IT MAY USED 6.00 MHZ
6	D1, D2, D3 D4, D5, D6	DIODE 1N4001	
1	D7	DIODE 1N4148	
1	J1	6 PIN WAFER 90 DEGREE	
1		5339 REV 6.0 PCB	
183		JUMPER WIRE	

PART TWO

3	LED1, LED2 LED3	GREEN 2*5 mm LED	
1	J1	BLACK CABLE	

KEYBOARD INTERFACE CONNECTOR

DESCRIPTION	VOLTAGE	PINS	CONNECTOR
Keyboard Clock	+5VDC Signal	1	
Keyboard Data	+5VDC Signal	2	
Keyboard RESET	0	3	
Ground	0	4	
Power Supply	+5 VDC	5	
			5 Pin DIN at PC System Input

TECHNICAL DATA

POWER REQUIREMENT.

+5VDC @240mA norminal

INTERFACE PROTOCOL

See Schematic for pinout

data Protocol is serial format TTL

MECHANICAL DATA

Total Travel : 3.8mm±0.2mm

Pretravel : 1.9mm±0.2mm

Operating life : 50 mega cycles

Sense of touch: Foam Pad Positive Tactile

ENVIRONMENTAL DATA

Operating temperature: 0° to 55°C

Relative humidity : 20%—95% non-condensing

Altitude : – 1000ft to 10000ft

LIMITED WARRANTY

Behavior Tech Computer Corporation (BTC) makes the following non-transferable warranty to the original purchaser.

The keyboard is warranted to be free from defects with normal usage for one year after purchase. During this period, you may return a defective keyboard for service under warranty.

If you need to return your keyboard for service under warranty, please repack it in the original packaging to protect the product from any shock or damage in shipment. Make sure that you do not remove the keyboard model and serial number label from the bottom of your keyboard.

Send the keyboard to BTC at your own expense. It will be returned via prepaid UPS Surface. Your keyboard will be repaired free of charge promptly, subject to the availability of parts.